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## Session 4

### Vitamin D in salmonids – wild and farmed, from head to tail – impact on dietary intake?

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#### Introduction

Salmon (*Salmo salar*) and rainbow trout (*Onchorhynchus mykiss*) are generally stated as having high vitamin D content. However, the data available for the content of vitamin D are very limited. We investigated the variation of vitamin D within individual wild salmon, and between wild salmon, farmed salmon and farmed rainbow trout. The hypotheses were that content of vitamin D varies depending on the part of the salmon consumed, and that wild salmon has a higher content of vitamin D than farmed salmonids.

#### Method

Variation of vitamin D within wild salmon (n=3) was assessed by dividing one of the fillets into eight parts. Furthermore, content of wild salmon (n=5), farmed salmon (n=13), and farmed trout (n=18) was analyzed for content of vitamin D [vitamin D3 and 25-hydroxyvitamin D3 (25OHD3)] by LC-MS/MS, and for fat.

#### Results

The variation in vitamin D and fat content within wild salmon were 10.6-34.9µg vitamin D3/100g, 0.17-0.47µg 25OHD3/100g, and 4.2-14.7g fat/100g. Between the three salmon no significant difference was found for fat, but there were significant differences in the content of vitamin D3 ( $P<0.00001$ ), and 25OHD3 ( $P<0.05$ ).

In the wild salmon, the calculated content in 100 gram of raw fillet was between 13.7 and 30.7µg vitamin D3.

Wild salmon had significantly higher vitamin D3 content than farmed salmon, and farmed rainbow trout,  $18.5\pm4.6$ ,  $1.6\pm0.5$ , and  $5.0\pm2.3\mu\text{g}/100\text{ g}$ , respectively.

#### Conclusion

The huge variation in vitamin D within a salmon fillet, and the significantly lower vitamin D content in farmed versus wild species will have a negative impact on dietary intake.